

Claims

What is claimed is:

- 506
P2
1. A head suspension assembly comprising:
a load beam having a proximal end, a distal end, a mounting region on the proximal end,
and a rigid region adjacent to the distal end;
a flexure for supporting a read/write head at the distal end of the load beam; and
at least one strain transducer circuit on the head suspension assembly and to detect
strain in the head suspension assembly.
 2. The head suspension assembly of claim 1 wherein at least one strain transducer circuit
is located on the load beam.
 3. The head suspension assembly of claim 2 wherein the load beam includes a spring
region between the rigid region and the base and further wherein at least one strain transducer
circuit is located in the spring region.
 4. The head suspension assembly of claim 2 wherein at least one strain transducer circuit
is located on the rigid region of the load beam.
 5. The head suspension assembly of claim 1 wherein the flexure includes a head
attachment region for supporting the read/write head at the distal end of the load beam such
that an elastic deformation of the head suspension assembly generates strain in the head
suspension assembly and displaces the head attachment region from a neutral position.
 6. The head suspension assembly of claim 5 wherein the strain transducer circuit has an
electrical resistance which varies with strain in the head suspension assembly at a position of
the strain transducer circuit thereon such that the resistance in the strain transducer circuit
varies with deformation of the head suspension assembly to allow detection of motion of the
head mounting region out of the neutral position.

Sub 13
7. The head suspension assembly of claim 6 wherein at least one strain transducer circuit is located on the load beam.

8. The head suspension assembly of claim 5 wherein the load beam includes a spring region between the rigid region and the base and further wherein at least one strain transducer circuit is located in the spring region.

9. The head suspension assembly of claim 8 wherein the spring region has an open region that divides the spring region into two radius arms and a strain transducer circuit is located on each one of the radius arms.

8
10. The head suspension assembly of claim 6 wherein the strain transducer circuit includes a single strain gauge lead having an electrical resistance that varies with strain on the lead.

9
11. The head suspension assembly of claim 10 wherein the strain gauge lead is formed of Constantan.

12. The head suspension assembly of claim 1 wherein the strain transducer circuit is on the flexure.

Sub 14
13. A head suspension assembly comprising:
a load beam having a proximal end, a distal end, a mounting region on the proximal end,
and a rigid region adjacent to the distal end;
a flexure having a head attachment region for supporting a read/write head and at the distal end of the load beam such that an elastic deformation of the head suspension assembly displaces the head attachment region from a neutral position; and

Sub A4
at least one strain transducer circuit on the head suspension assembly and to detect strain in the head suspension assembly caused by deformation thereof, allowing detection of motion of the head mounting region out of the neutral position.

15
14. The head suspension assembly of claim ~~13~~¹⁴ wherein the strain transducer is located on the load beam. ✓

Sub A5
15. The head suspension assembly of claim 13 wherein the strain transducer circuit has an electrical resistance which varies with strain in the head suspension assembly at a position of the strain transducer circuit thereon such that the resistance in the strain transducer circuit varies with deformation of the head suspension assembly to allow detection of motion of the head mounting region out of the neutral position.

16
16. The head suspension assembly of claim ~~15~~¹⁶ wherein the strain transducer circuit includes a single strain gauge lead having an electrical resistance that varies with strain on the lead.

Sub A6
17. A head suspension assembly comprising:
a load beam having a proximal end, a distal end, a mounting region on the proximal end, and a rigid region adjacent to the distal end;
an actuator arm having the load beam supported therefrom;
a flexure for supporting a read/write head on a head attachment region and at the distal end of the load beam such that an elastic deformation of the head suspension assembly displaces the head attachment region from a neutral position; and
at least one strain transducer circuit on the head suspension assembly and to detect strain in the head suspension assembly caused by deformation thereof, allowing detection of motion of the head mounting region out of the neutral position.

201
A6

18. The head suspension assembly of claim 17 wherein the strain transducer circuit has an electrical resistance which varies with strain in the head suspension assembly at a position of the strain transducer circuit thereon such that the resistance in the strain transducer circuit varies with deformation of the head suspension assembly to allow detection of motion of the head mounting region out of the neutral position.

19. The head suspension assembly of claim 18 wherein at least one strain transducer circuit is located on the actuator arm.

20. The head suspension assembly of claim 18 wherein at least a first strain transducer circuit is located on the actuator arm and at least a second strain transducer circuit is located on the load beam.

ADD
AM 7